

LEAD AND CADMIUM EXPOSURE AMONG A COHORT OF PREGNANT WOMEN IN CALI-COLOMBIA: THE GEMA STUDY

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Background and aims: Industrialization and inadequate waste disposal have increased exposure to heavy metals. Our studies in Cali-Colombia show that women of low socioeconomic position are exposed to heavy metals during reproductive age. This study aims to characterize high-risk exposure behaviors and its relationship to blood cadmium and lead levels in pregnant women of urban Cali.

Methods: An ongoing prospective cohort study is developed. We included 386 pregnant women between 18-35 years of age, living at one of the poorest areas of Cali. Patients were recruited at 11-13 weeks of gestational age and answered a questionnaire on sociodemographic characteristics, parents' occupational history, smoking habits and other risk behaviors of exposure to lead and cadmium. Additionally, concentrations of lead and cadmium in maternal blood were determined by using atomic absorption spectrometry coupled to graphite furnace.

Results: 386 blood samples were evaluated at enrollment. Medians of cadmium and lead were 0.115ug/dl(<0.014-4.26) and 1.013ug/dl(<0.002-16.18), respectively. Among pregnant women 32.9% had Cd levels $\geq 0.4\mu\text{g/l}$ and 4.15% had Pb levels $\geq 5\mu\text{g/dl}$ (CDC recommendations). Only 7(1.8%) of pregnant women showed high levels of both lead and cadmium, but 129(33.4%) had at least one blood metal concentration above recommended levels. We evaluated several practices and exposure sources, and determined an increased risk of lead levels $\geq 5\mu\text{g/dl}$ for those women living <4km of the Navarro dump(OR:6.2; CI95%1.7-21.7) and those living <2 blocks away of battery-handling commercial sites(OR:8.33;CI95%1.01-82.8). An increased risk of cadmium levels $>0.4\mu\text{g/l}$ was also observed among women living <4km of the dump, but it was not significant(OR:2.1;CI95%0.63-7.5). Individual risk practices were also identified.

Conclusion: A third of these pregnant women are exposed to significant levels of heavy metals in blood. We evaluated several sources of exposure and found that residence near a former waste disposal site and battery-handling sites were independently associated with maternal blood lead levels